Remarks

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Initially, Applicant expresses his appreciation for the courtesy of a personal interview granted to his attorney by Examiner McClendon on December 30, 2003, the results of which are summarized in the Interview Summary form.

During the interview, Applicant's attorney indicated that minor amendments would be made to the specification. These amendments are now set forth above.

In the Office Action, the Examiner indicates that she is interpreting claim 1 to be a rubber composition or a crosslinked product comprising an isobutylene copolymer with a density of at most 0.95. The Examiner confirmed during the interview that her interpretation of claim 1 relates the density of at most 0.95 to the isobutylene copolymer, rather than the rubber composition or its crosslinked product. However, as indicated in the last paragraph on page 11, the paragraph bridging pages 13-14, and the second full paragraph on page 14 of the specification, the density limitation relates to the rubber composition or crosslinked product, rather than the isobutylene copolymer. It was agreed during the interview that claim 1 would be amended to reflect this disclosure, and such amendment has been set forth above.

The Examiner further suggested, during the interview, that the term "capable" should be avoided in claim 1. It was agreed that the expression "capable of being" in claim 1 would be amended to --and can be--, and this amendment is included in amended claim 1 set forth above.

For editorial reasons, claim 3 has been amended to change "for the" in line 1 to --of--, as agreed during the interview.

The patentability of the presently claimed invention over the disclosures of the references relied upon by the Examiner in rejecting the claims will be apparent upon consideration of the following remarks.

Thus, the rejection of claims 1-3 under 35 U.S.C. §102(b) or 35 U.S.C. §103(a) based on Kasai et al., as well as the rejection of claims 1-3 under 35 U.S.C. §102(b) or 35 U.S.C. §103(a) based on Shurpik, the rejection of claims 1-3 under 35 U.S.C. §102(b) or 35 U.S.C. §103(a) based

on Pearson et al. and the rejection of claims 1-3 under 35 U.S.C. §102(b) or 35 U.S.C. §103(a) based on Zapp et al., are respectfully traversed.

With regard to each of these rejections, in the Office Action, the Examiner takes the position that, although each of the references does not expressly teach the density of the butyl rubber resins, an isobutylene rubber copolymer with any density could have been used since the irradiation step would have worked equally as well with any type of isobutylene rubber at any density. However, as suggested by Applicant's attorney during the interview, this is not a proper basis for establishing a *prima facie* case of obviousness. There must be some disclosure in the references which teaches or suggests the present invention as claimed, and in the present case, this includes a requirement of the claimed invention that the density of the rubber composition or its crosslinked product must be at most 0.95. The failure of the references to disclose or suggest anything about the density of the rubber composition or its crosslinked product, much less the claimed requirement for a density of at most 0.95, supports Applicant's position that the references do not raise a presumption of obviousness.

Another argument advanced during the interview by Applicant's attorney relates to the Examiner's statement in the Office Action, in connection with each of the rejections, that Applicant has not established the criticality of the density. As discussed during the interview, the criticality of the density is supported by the comparative results in the specification, specifically in Tables 1 and 2 on pages 23-24 and 28-29.

Thus, a particularly important feature of the present invention is the requirement that the rubber composition or its crosslinked product have the specified composition with the specified density, which is supported by the experimental data, in particular, shown in Tables 1 and 2. In Examples 1-3 in Table 1, various butyl rubbers (raw rubbers) are prepared by the standard procedures in such a manner that the density of the composition (same as density of crosslinked product) is at most 0.95. In Examples 4-6, the amounts of the crosslinking agents are decreased (relative to Examples 1-3) to near the lower limit required for obtaining the primary crosslinked product (or preliminary molding) and an electron beam having an absorption dose of 50 kGy to 200 kGy is applied to the thus obtained crosslinked product to obtain a similar crosslinking density (also referred

to as vulcanization degree) and a density of at most 0.95. Similar considerations apply to Examples 7-10 in Table 2.

On the contrary, Comparative Examples 1-12 in Tables 1 and 2 disclose the cases where the densities of the compositions or crosslinked products exceed 0.95 (in practice, 1.01 to 1.30).

As described above, the object of irradiating γ-rays is to sterilize the crosslinked product, and an electron beam is used to increase the density of the crosslinked product (i.e. primary crosslinked product or preliminary crosslinked product) to the objective crosslinking density.

From these results, it is apparent that it is critical that the composition or crosslinked product has a density of at most 0.95. That is, as shown in Tables 1 and 2, at the density (density of crosslinked product: g/cm^3) of at most 0.95, the cross-linking density defined by the number of crosslinked points present in unit volume (X 10^{-5} mol/cm^3, cf. pages 16-17 of the specification) is markedly increased, namely, from 6.65-18.2 (Comparative Examples 1-6) to 21.7-37.0 (Examples 1-6). Thus, advantages can be obtained by the simple construction of specifying a density of the crosslinked product of at most 0.95, such that the secondary cross-linking by radiation can be carried out with a lower dose and the radiation treatment is effectively advanced with less oxidation deterioration of the resin since radiation is readily transmitted. Further, the distribution width of the dose distribution is so small that sterilization precision can be maintained to a higher degree, and in particular, when applying radiation to a fluoro resin-laminated crosslinked material or product, damage to the fluoro resin be decreased.

As indicated in the present specification, particularly on pages 4 and 5, sterilizing rubber articles by radiation sterilization can lead to oxidation deterioration of the rubber article. As indicated in the paragraph bridging pages 13 and 14, the present invention makes it possible to conduct sterilization with less oxidation and deterioration of the resin in the rubber article. This is confirmed by the test results in Tables 1 and 2, i.e. the tests in that part of Table 1 on page 24, and the corresponding tests in Table 2. The test conditions are described in the specification beginning on page 14 and continuing over through page 21. Considering the nature of these tests according to the description thereof, it can be seen that the test results in Tables 1 and 2 establish the superiority of the present invention over the comparative samples having a density greater than 0.95. For instance,

a transmission dose can be sufficiently high for the present invention to realize an appropriate sterilization guarantee level (page 19, lines 12-19) without significantly affecting the surface state and other properties, in contrast to the comparative samples. The chemical test results and physical test results described in Tables 1 and 2 also show substantially less deterioration in the case of the samples of the present invention as compared to the comparative samples. The last two rows in Tables 1 and 2 provide an overall assessment of the samples, based on the standards described at the bottom of page 21 of the specification, and clearly indicate that the samples of the present invention are substantially superior over the comparative samples.

In view of these considerations, Applicant respectfully submits that the criticality of the density limitation of the present invention has been clearly established.

Therefore, in view of the foregoing amendments and remarks, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

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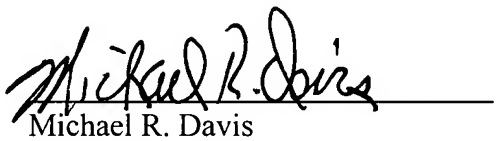
By: 

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